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EXAMINER	
ZERVIGON, RUDY	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 25

Application Number: 09/414,520
Filing Date: October 08, 1999
Appellant(s): TAKAHASHI ET AL.

Ralph T. Webb
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 19, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on December 17, 2002 has not been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because the patentability of apparatus claims 1-5 and the patentability of method claims 6-10 are distinguishable.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,961,850	Satou et al	10-1999
5,324,553	Ovshinsky et al	06-1994
6,215,087	Akahori et al	04-2001

(10) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claims 1, 2, and 5 are rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 18.

Claims 4, 6, 7, 9, and 10 are rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 18.

(11) Response to Argument

Apparatus Claims 1, 2, and 5:

Applicant states on page 6 that with respect to the claim rejections of claims 1, 2, and 5 that "The Examiner acknowledged that Satou et al does not teach (ix.) a gas that contains at least carbon and fluorine wherein a gas species is generated which contains carbon and fluorine according to a plasma dissociation, and (x.) plasma generation means which generates a plasma in which the degree of plasma dissociation is a middle degree and the gas species containing carbon and fluorine is generated fully in the plasma.". Applicant is incorrect. With respect to the claim rejections of claims 1, 2, and 5, the Examiner clearly set forth in the final rejection:

"

Satou et al does not teach:

i. A microwave frequency in the 300MHz to 1GHz range

ii. plasma generation means which generates a plasma in which the degree of plasma dissociation is a "middle" degree and the gas species containing carbon and fluorine is generated fully in the plasma

iii. electron energies in the range of 0.25eV to 1eV

" page 3.

In response to applicant's argument that the apparatus claims requiring "a plasma processing apparatus for etching" is not a limitation taught by the apparatus claims, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

In response to applicant's argument that "there is no teaching or suggestion in Satou et al of an apparatus for controlling the extent of dissociation of a processing gas or for using a plasma excitation frequency of 300MHz to 1GHz, Satou, as discussed by the Examiner in the final rejection, indeed provides the requisite apparatus for establishing and maintaining plasma dissociation. As was stated in the final rejection, Satou teaches:

"

iv. a plasma ECR processing apparatus (Figure 1, column 2, lines 32-58) having a vacuum processing chamber (Figure 1, item 10, column 3, lines 10-15)

v. a sample table (Figure 1, item 11, column 2, lines 32-58) for mounting the sample (Figure 1, item 13, column 2, lines 32-58) which is processed in the vacuum processing chamber

vi. a plasma generation means (Figure 1, column 2, lines 45-52), wherein a plasma etching (column 2, lines 59-67; column 4, lines 32-36) of an insulating film (column 5, line 11) is carried out by generating a plasma in response to introduction of a gas (column 2, lines 59-62) which generates a plasma

vii. A temperature of a region (items 36, 37; column 2, lines 52-58) which forms a side wall of the vacuum processing chamber is controlled to have a range of 10 °C to 120 °C (column 3, lines 10-21)

viii. A plasma processing (column 2, lines 59-67) apparatus wherein as a means for adjusting a temperature of the vacuum wall, a temperature adjusted coolant (column 3, lines 22-23) medium is used.

"

In response to applicant's argument (first two paragraphs, page 8) that because Ovshinsky teaches a deposition apparatus as opposed to the claimed etching apparatus, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Applicant states that Ovshinsky does not teach "intermediate degree" plasma dissociation because Applicant defines dissociation to be "the process by which electrons under ECR acceleration by microwaves waves collide against molecules to decompose them" (last paragraph, page 8). In response, the Examiner believes Applicant's definition is excessively narrow based on the dictionary definition:

Dissociation *n* **1a:** the process by which a chemical combination breaks up into simpler constituents[1]

As a result, ionization species as described by Ovshinsky (column 5, lines 25-30) are included among dissociations per definition. Additionally, Ovshinsky teaches all collected forms of dissociations including free radicals, neutral species, and ions (column 5, lines 25-30).

Applicant states that "the present invention does not utilize the cyclotron resonation of ions", however, Applicant indeed claims, in claim 1, "an electron cyclotron resonance system...of

[1] Merriam-Webster's Collegiate Dictionary - 10th Ed. p.337

plasma dissociation". From the definition above, Applicant implies all dissociation processes including free radicals, neutral species, and ionization as taught by Ovshinsky.

Method Claims 4, 6, 7, 9, and 10:

Applicant states that with respect to the cited references, none of the cited references teach "etching methods" (line 2, page 11). In response:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "etching methods") are not recited in the rejected claims – "a plasma processing method". Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant references prior arguments presented. In response, Applicant is directed to the body of the finally rejected method claims and to the citations, definitions, and rationale provided above Further, in response to applicant's argument that Akahori is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Akahori is both in the field of applicant's endeavor (plasma generation and control – column 15, lines 15-23) and is reasonably pertinent to the particular problem with which the applicant was concerned:

Applicant –

"whereas in the present invention, in the context of etching, the use of intermittent microwaves is to control dissociation and improve etching performance by lowering the electron temperature"

Akahori –

" Electron temperature rises by employing pulse oscillation, and the number of radicals which become effective at the time of forming film, particularly the number of radicals of high energy is increased. As a result, when the film forming speed becomes high, and radicals are thrust into the depth portion of the film. Thus, fine film is provided. " (column 15, lines 30-35).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Rudy Zervigon
Examiner
Art Unit 1763

Rudy Zervigon
October 20, 2003

Conferees
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